DOCUMENT RESUME

ED 296 977 SP 030 384

AUTHOR Babin, Patrick
TITLE Lecturing. 1986-1987. Occasional Monograph.
INSTITUTION Ottawa Univ. (Ontario).
REPORT NO ISBN-0-920597-01-7
PUB DATE 87
NOTE 49p.; Document printed on gray paper.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS College Faculty; Communication Skills; Higher Education; *Lecture Method; *Questioning Techniques; Teacher Effectiveness; *Teaching Methods

ABSTRACT

The major objectives of this monograph are to familiarize the reader (teachers) with the elements of an effective lecture and to help them understand lecture forms and how to organize them effectively. In the first section, the ingredients of a lecture are considered with emphasis upon the lecturer's style of delivery and techniques for relating to the student audience. Section 2 discusses preparing lectures, organizing them, and selecting the most effective presentation format. A part of this section offers suggestions for verbal interaction between the lecturer and students, e.g., oral questioning techniques and answering student questions. (JD)

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OCCASIONAL MONOGRAPH

LECTURING

Patrick Babin, Ph.D.

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1986-1987

ISBN 0-920597-01-7

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I Introduction

This monograph is for everyone who teaches in an educational institution. If you are a first-year teacher experiencing anxiety vis-à-vis your initial teaching encounter, or if you are an experienced professor who wants to enrich her/his repertoire of pedagogical skills, you will find both conceptual and practical content within these confines.

The major objectives for this publication are:

1. To familiarize the reader with the elements of an effective lecture.

2. To explain the difference between a formal and an informal approach to lecturing.

3. To enable the reader to organize lessons according to the following levels of learning:
   a. Facts.
   b. Concepts.
   c. Principles and rules.
   d. Problem-solving.

II Lecturing

The most popular teaching strategy in North American institutions of higher learning is lecturing.

1. What is lecturing?

It is characterized by one person doing most of the talking and, consequently, by nonverbal feedback. It is an efficient way of communicating knowledge from one person to a group. This one-way communication makes it efficient.

The lecture, which took its name from the religious teachers of the Middle Ages, the *lektors*, became the chief form of instruction because these teachers were, in fact, the main formal source of new information for students. The invention of the printing press and, more recently, the development of media, computers, and individualized instruction have reduced dependence on the lecture—but only slightly (Ericksen, 1978). These other means are lacking in one important element—face-to-face confrontation with other thinking, gesturing, talking, feeling human beings.

The classical-type lecture has evolved in many ways and we now hear about the illustrated lecture, the lecture-discussion, the lecture-laboratory, the lecture-recitation, the lecture-demonstration, and lecture-problem-solving. These adaptations use the lecture as only one part of a basic teaching technique.

2. When is lecturing suitable?

Verner and Dickinson (1967) give six situations when lecturing is suitable, and six situations when it is not.

a. Suitable:

1. When the basic instructional task involves the dissemination of information.
2. When the information to be imparted is nowhere else available.
3. When a segment of content material must be organized and presented in a particular way for a specific group.
4. When the establishment of learner interest in a subject is an indispensable aspect of the learning objective.
5. When the content material presented is needed only for short term retention; and
6. When introducing an area of content or providing oral directions for learning tasks that will be pursued and developed through some other instructional process.

b. Unsuitable:

1. When the instructional objective involves any form of learning other than the acquisition of information.
2. When the learning task involves the initiation or alteration of attitudes, values, or behaviour.
3. When the instructional objective involves the application of skills or information.
4. When the information acquired must be available through long-term retention.
5. When the content material is complex, detailed, or abstract.
6. When learner participation in the learning activity is crucial to the achievement of the objective.

3. What are some of the important ingredients of effective lecturing?

The aforementioned is difficult to answer because the impact of a lecture depends on a number of variables which are specific to a particular class; namely, the personality and mannerisms of the professor, the course content, and the backgrounds and needs of the students.

Donald A. Bligh, author of the provocative *What's the Use of Lectures?*, states that "there is no more agreement about what is a good lecture than there is about good music."

> To many people the college lecture is a dinosaur, a holdover from a pretechnological age when books were scarce or nonexistent and the lecture was the primary way students could gain information. For some it represents some of the worst moments in their college educations, evoking images of fighting to stay awake while a distant professor droned on and on, his head buried deep in his yellowed lecture notes. (Lowman, 1984)

To others lecturing is a vehicle for inspiring students, a means of examining value judgments, and a source of the latest knowledge. "Sometimes the lecture", according to Ericksen (1984), "is the single most effective method for arousing interest, initiating action, and challenging the attitudes and beliefs held by students."

a. Teacher talk. The research analysis of student ratings shows that central weight is given to how well the teacher talks. This is the strongest common denominator influencing how students respond to most of the specific items on a rating scale (Ericksen, 1978).

> Speech is a basic tool, the chief means by which teachers attempt to reach students, and command of voice is as serviceable a part of professional competence as command of subject matter. (Eble, 1979)

It may be desirable, for those of us who lecture, to occasionally listen to our own voices via audiotape.

b. Enthusiasm. Are we enthusiastic when we lecture? Do we vary our *pitch* and *volume*? Do we avoid repeated mannerisms? Do we *pace* our lectures? Do we avoid "ahs" and "urs"? Do we speak with *clarity*? Do we hold the *attention* of our audience?

Pitch, resonance, projection, syntax, word selection, enunciation, pronunciation, figurative language, gestures—all must be under the control of the lecturer.

> It may not be necessary for a teacher to have the resonance and force of an orator, or the impeccable enunciation and correct pronunciation of a television announcer, or the quick wit of a popular master of ceremony, but this does not give license to be as boring and dry as the proverbial hills of Gilboa, or to speak indistinctly and inaudibly, using distracting mannerisms and annoying pet expressions, punctuated with frequent pauses and space fillers. (Penner, 1984)

c. What about preparation? Much will depend on the objectives for a particular lesson. How is the teaching time to be organized in relation to the content? How are the students to be actively involved? Are there any physical or psychological aspects of the lecture hall that might enhance or retard the lecture? Will the chalkboard, the overhead projector, television, or the slide projector be helpful?

> Planning and preparation are an absolute prerequisite for a good lecture. This seems so fundamental that it is surprising how many men believe that

> because they have the knowledge, all they have to do is fill in the necessary time burbling garrulously, but ineffectually before an undergraduate audience. A lecture must be prepared; preferably so perfectly prepared that the lecturer can pursue his train of reasoning from the beginning to the end, without any notes, and yet be logical, clear cut and get across the cardinal points he is trying to make. Most of us have not reached this stage, but need notes or headings to keep us on the right track. This is perfectly justifiable, but to write a lecture out in longhand and read a prepared statement is unforgivable, except where one is delivering some highly difficult research problem to a very select audience or scientific minds. (Trott, 1963)

d. How well do we know our students? How much do *they* already know about the subject? How interested are they in the course? Is it a compulsory course? How much do we as professors know about the content — can we rely on past experience with little preparation? Have we referred to recent books and research findings in the preparation of the lesson? Do we refer to the course outline during each lesson? Since we cannot "cover" everything in the discipline, how do we decide what is best?

e. How do we organize the lecture? Hart (1973) offers a few organizational approaches:

1. **Chronological:** emphasizes the time sequence of lecture topics. Maintains a narrative line. Although commonly used, it is not necessarily the most appropriate. Many authorities refer to it as a weak glue.
2. **Spatial:** shows coherence or differentiation among lecture topics in terms of space relationships.
3. **Causal:** attempts to show the clear, sufficient and/or practical implications of cause-to-effect or effect-to-cause relationships.
4. **Ascending-Descending:** places lecture topics in sequence according to their importance, familiarity, or complexity.
5. **Problem-Solution:** a standard pattern of organizing lecture topics by means of dramatizing an obstacle and then presenting alternative remedies.
6. **Topical:** perhaps the most common method of organization whereby selected but parallel elements of the same subject are focused on successively.

f. Motivational climate. Effective learning depends on our ability to transform resistance to support and to maintain the interest that brought students to the course in the first place.

> Classroom instructors who are excited by their subject, caught up in the fascination of what they teach, foster student enthusiasm for the subject by personal example. Teacher enthusiasm infects lectures and discussion and can be spread to students' work outside class. (Lowman, 1984)

g. How can we best demonstrate the significance of the course content? How can we share our love affair with statistics, pathology, calculus, or sociology? How can we best tap the needs and interests of students without resorting to showmanship and classroom entertainment? How do we get the content to stick to the ribs of our students? From the outset of the course, do we share our course objectives and course outline with the students? Do we stick to both? What types of *reinforcement* do we mete out? Do we ignore the intrinsic at the expense of a carrot-and-stick approach? Dependency on grading as the dominant means of motivation is often detrimental to all concerned. How do we reach the uninterested? How do we nourish *intellectual curiosity*?

4. Notetaking

Regardless of their verbal adeptness, students need to be prepared for systematic listening and notetaking during lectures. Although some teachers question the importance of notetaking, there is evidence to suggest that notetaking helps the learner to assimilate ideas. "It at least provides a means of combating complacency during a lecture by keeping the learner active." The aforementioned may not be ample justification. A student must be *trained* to take notes; s(he) must be taught to listen for main ideas in a lecture. If not, the notebooks will reflect sketchy and often incomprehensible jottings with little value for the students. We as teachers must provide this training, especially in the first-year introductory courses. Periodically, students should be asked to paraphrase the lecture or to list the main ideas covered.

5. Understanding

Understanding is also vitally important. How do we get our message across? Does the lecture have a body? substance? Have we marked out the boundaries of the topic? Have we defined the concept(s)? Described the process? Do we provide evidence which supports the points being made? Do we provide examples that confirm or deny the validity of topics? Do we recapitulate the main ideas? Do we promote independent thinking? Do we introduce variety in the manner we present ideas?

Research studies indicate that well-organized lectures promote retention and help to develop in students the ability to apply concepts and to generalize from specific experiences. The way the lecture is *sequenced* makes a difference.

6. Chalkboard

Let us not neglect the chalkboard—and legibility. It was Bumstead who wrote in 1841, "The inventor or introducer of the blackboard deserves to be ranked among the best contributors to learning and science, if not among the greatest benefactors of mankind". Perhaps a bit of an over-statement—but the blackboard does remain the best of our visual aids and it never breaks down—provided chalk is available. Unfortunately for students and professors, the chalkboard does not clean itself!

7. Pacing

The student, and not the professor, is in control of the lecture. The former processes information *at his own rate*. Repetition, redundancy, and even silence on the part of the instructor are vital. Underscoring major learnings is essential. Examples, anecdotes, and questions may help bridge theory and praxis. The personal feeling of understanding on the part of students is a powerful form of reinforcement. The problem is complicated by the fact that meaning is personal, private, and subjective. As the student listens, s(he) gives meaning to the words within the context of what s(he) has already learned in class or elsewhere. S(he) is not a passive vessel being filled with knowledge—there is constant filtering and/or blockage.

8. Abusing the lecture

There are many ways of doing it.

A professor, at the outset of each class, distributes a written copy of his lecture notes to all students. Then he proceeds to repeat the same information during his lecture. Needless to say, attendance is poor (many leave after obtaining the handouts) and those who remain pay greater attention to the hand-out than the professor's delivery. Another professor writes everything down on an acetate roll and is so busy doing it that s(he) neglects communicating the information to the assembly.

Another instructor begins his lesson without an introduction and makes no reference to the broader context related to the specific topic being considered that day. He starts lecturing by giving excessive attention to the trivial details of the subject and reminds the students that they should take everything down because it'll be on the exam. With a fixed posture, he keep his eyes on his notes and occasionally looks at the ceiling lights.

In the third scenario, the instructor speaks in a monotonous voice, shows no emphasis, force, or enthusiasm. S(he) hesitates frequently in the middle of sentences, but never pauses at the end of major lecture sections. S(he) insists on presenting points in the orderly manner indicated in the lecture notes even though the class period is almost over. As a result, approximately half of the lesson will not be taught, time will not permit summarizing, and students will be left dangling.

9. Intellectually exciting lectures

An outstanding lecture is many things. Primarily it is content that has been carefully selected and organized to capture the essence of a topic, complement what is presented in readings, and motivate students to learn the rest. The best planned content, however, will have little impact on students if it is not delivered well. To achieve the potential of a lecture, the instructor must use variety and tension in her/his voice, movements, and visual enrichment to keep the audience captivated and stimulated and to aid their memory of what went on.

Read each statement in this list and decide whether it is a suggestion for bad lecturing or a suggestion for good lecturing.

---

1. Begin a course with no introduction to the subject or to your own bias. Simply start with the first topic you wish to present.
2. Begin each course and class by pricking the student's interest, expressing positive expectations, and sharing the objectives you have for them.
3. Do not acknowledge the students' interests or previous knowledge and experience.
4. Speak in a monotonous voice, showing little emphasis, force, or enthusiasm.
5. Fit the material you present to the time you have available.
6. Give excessive attention to the trivial details of the subject or to those parts that most interest you; omit topics of more central importance or interest.
7. Present learned quotations without connecting them to the content.
8. Indicate that you know the students are confused or impatient, but then do nothing differently.

9. Break up the monotony of lectures by varying methods of presentation.
10. End each lecture with a conclusion that connects what has happened today with what will be covered during the next meeting.
11. Make no references to the broader context related to the specific topic being considered.
12. Show little sense that time is passing and insist on presenting points in the orderly manner you have planned, even if individual classes end in midtopic or you fall far behind the course syllabus.
13. Seek concise ways to present and illustrate content. Express concepts in the simplest terms possible and define technical terms when using them.
14. Become preoccupied with the historical context of a topic, neglecting the central subject of the course.
15. Remember in your relationships with students that all of you are persons first, students and teacher second. Remember that you, as a teacher, "are both host and guest".
16. Use arcane terms and make no attempt to define them; do not acknowledge that students may not know what you mean.
17. Qualify terms so excessively that students will not be able to explain them to a friend immediately after class. Be so specific and sophisticated in the definitions you present that students will have to memorize what you say word for word and will be unable to define terms meaningfully in their own language.
18. Use a wide range of voices, gestures, and physical movements, but be yourself: develop a varied and interesting style consistent with your values and personality.
19. Be guided by your students during your lectures. Continually observe their reactions, acknowledge them, and modify your approach when indicated.
20. Dwell extensively on your private scholarly quarrels with other authorities over esoteric points without showing how your concerns relate to the larger subject.
21. Follow a prepared outline but include improvised material or illustrations. Appear spontaneous even when you are following the outline closely.
22. Rarely look at your audience. With a fixed posture, keep your eyes on your notes, the floor, the ceiling, or the side walls.
23. Give students regular places to catch their breath and ask questions. It is "better to talk too little and stop short than to go on for too long".
24. Justify conclusions on the basis of tradition or authority without explaining why the authorities believe as they do.
25. Hesitate frequently in the middle of sentences, but rarely pause at the end of major lecture sections.

10. Elements of a lesson

One of the key elements to effective lecturing is preparation.

How well prepared is your lesson? What factors should we consider when preparing a lesson?

The following checklist is suggested as a guide. Please adapt it to your own needs.

a. Introduction

Have you included:

(1) Your lesson objective(s)? What do you hope to accomplish during today's class?

(2) A rationale for the lesson? Why are you teaching this lesson? Why is it important to the students? Why should they learn this content? The response, "because it'll be on the exam", may not be adequate.

(3) Linkage between today's lesson and previous lessons and/or student experiences?

(4) A list of teaching aids? Are you planning to use transparencies? Are they legible? Are you showing slides? Have you requested the necessary equipment? Are you familiar with the equipment?

(5) An outline of the specific teaching strategies? What are your plans for this particular lesson?

b. Review

Does the review:

(1) Provide for a quick recapitulation of student mastery of previous learning(s)?

(2) Include an informal survey of readings and assignments (if applicable)?

Reading assignments: *If given, students should be held accountable. If there is no* ***need*** *to read, students will not. Many prefer to be spoon-fed in the classroom. Hold them responsible for whatever they read—from the outset.*

---

c. Presentation (the MEAT)

Does the presentation provide:

(1) Content arranged in logical order?

(2) Development from known to unknown, from simple to complex?

(3) Consideration for the readiness and knowledge background of the students?

(4) Clarity as to the level of content being taught? Is the focus on facts, principles, key concepts?

(5) Learning/teaching activities based on established principles of learning? Reading from notes for two hours may not be appropriate; have you considered other strategies?

(6) Linkage with the lesson objectives delineated in your introduction?

(7) A sufficient variety of tasks to appeal to all students? Notetaking over a two-hour period can stifle interest and motivation.

(8) Integration, whenever possible, with other learning? Are relationships established between lesson content and reading assignments?

d. Application

Does the application component of your lesson (not always necessary):

(1) Provide for student practice of new learning(s)?

(2) Allow time for explanation(s) and question(s) to clarify content and/or assignments? If assignments are given, they should not be ignored.

(3) Ensure that students know what is expected and how you want it done.

(4) Allow for performance checks (procedures and materials for tests, marking guides, evaluation criteria, acceptable standards)?

e. Conclusion

Does the conclusion:

(1) Summarize important points and state conclusions reached? Was your mission accomplished? If for unforeseen reasons, you were unable to teach all lesson objectives, share that information with your students.

(2) Link the lesson with those that will follow (and perhaps with those which preceded)?

***Time:** always allow yourself time for summary and conclusion. It is too late to tie the pieces together when students are flocking toward the exits.*

---

f. Notes re: lesson plans

- ☐ Your lesson plan need not be a lengthy two-three page document; comprehensiveness and length are entirely up to you. Regardless, **there should be a plan**.
- ☐ Once thought-out the lesson plan should be **reviewed** before the class begins and not pigeon-holed until a few minutes before class time.
- ☐ No two teaching situations are identical. **What works well with certain students may not for another group.** Before reusing last year's lesson plan, study it carefully and be prepared to vary the content, methodology, and learning activities in accordance with your previous experience and the ability of your students.
- ☐ **A lesson plan is a guide; its major purpose is to keep you on track.** It should never be considered a crutch or a substitute for creativity and critical thinking. It should be used for quick reference and not read to a class. The professor should be sufficiently prepared to fill in most of the details from "memory" once the plan has supplied the major headings.

11. Ways of summarizing*

a. Do not necessarily wait for the end of the lesson. There are times when a brief summary of key points made in a segment of the lesson may provide needed clarification. Be observant for telltale signs from your students.

b. The summary should be brief but long enough to clarify student queries. This is one of the values of the summary—it is an invitation for the teacher to tie up loose ends.

c. A summary should never be considered as an addendum to a lesson; it is more than a reiteration of basic points; it is more than a review. It should extend the lesson.

d. A summary should always include opportunities to obtain student feedback. The latter is needed if the professor is to know whether the students have understood the content.

* Summarizing is singled out because it is the most neglected element of a lesson.

e. A summary may be initiated with a series of questions—either posed by the teacher or the students. An informal quiz is another way to summarize.

f. An open-ended question may be employed to conclude the lesson. The ensuing discussion should focus on the objectives of your lesson. The teacher's role during the summary discussion should be that of a moderator to ensure that the basic points of the lesson are brought out in a logical, orderly sequence.

g. If students are required to take notes, they may be asked to refer to their notes to summarize the lesson. There is no better way to check on the quality of their notetaking.

h. The teacher could write the major points/topics on the chalkboard or transparency and let students compare their notes with the board/screen summary.

i. A handout (preferably one sheet) covering the major highlights could be distributed at summary time.

j. The summary, in addition to reinforcing and/or clarifying, can be a useful bridge to guide students from one lesson to the next.

(Penner, 1985)

Are your students familiar with the ***three S method?***

1. ***Scan*** *— in order to get the general idea of the lesson, such as the main points, theme or problems.*
2. ***Study*** *— a careful reading of the assigned material, with an emphasis on the main points or answers to specific questions.*
3. ***Summarize*** *— just prior to class, or at least on the same day of class, by reviewing the main points.*

III Preparing Lectures

There is little doubt that one of the major barriers to effective classroom communication is a lack of purpose and organization structure in which there is no systematic arrangement of ideas, materials, and words into any obvious and coherent order or without purpose, meaning and central idea. Clear organization is the mark of a clear message. (Penner, 1984)

1. Organizing your content

Once you have selected a series of topics and subtopics for a lecture, you should organize the elements of content and intellectual skills for each topic. Robert Gagné offers a framework which can be used for the sequential organization of subject content and related learning activities. The four levels he describes can help you to establish conditions for successful learning and use of knowledge. Through this approach, students can be helped to:

a. Establish a **factual** foundation,
b. Develop **conceptual** understandings,
c. Use **principles** and **rules**,
d. Engage in **problem-solving** and other applications of the content.

By giving attention to each of these levels through lectures and other instructional techniques, students can be guided to apply and use the knowledge and skills gained beyond the classroom. Let us examine each of the levels listed above.

a. Factual foundation:

Items of information such as *terms, names, dates, places, methods,* or *events,* are the elements of subject matter which provide basic terminology and facts relating to a topic. When you require students, through your objectives, to identify, name, list, or label, you are treating the *lower* levels of informational content. In each subject field there is a great quantity of such detail to be learned and much attention is given in lectures and texts to presenting and explaining facts, but unless details are arranged in a structured pattern, they may not be used and may be quickly forgotten. Facts taught in isolation are like fish; they do not keep.

b. Conceptual understandings:

Students need help in organizing and structuring facts, recognizing those that have common features that can be grouped together as *concepts*. Here is an example of facts (objects) that lead to the formation of a concept.

man woman rodent bird = vertebrate

When students discriminate among objects and events by *classifying* or *grouping* those that have similar characteristics under a generalized name, they are using their ability to *conceptualize*. Concept formation may be very simple, as in the example just given, or more abstract and complex as when, for example, many attributes must be identified and integrated to provide understanding of such higher-order concepts as *democracy* and *kinetic energy*. Every field includes a wide range of concepts from the simple and concrete to high-level abstractions.

Exercise I

A number of items are listed for a unit in biology. These items are either factual elements or concepts. For each unit, mark the items accordingly.

Biology

(Blood circulation)

_____ 1. Blood

_____ 2. Food transportation

_____ 3. Red blood cells

_____ 4. Anemia

_____ 5. Pulmonary artery

_____ 6. Right ventricle

In the aforementioned exercise, we might list as facts items 3, 5, and 6, while concepts are 1, 2, and 4. There may be some variations in answers depending on individual interpretation of terms.

In summary, a major outcome of any lecture or other teaching/learning activity is for students to be able to generalize from the facts you present to form concepts on various levels. Concepts can be formed in at least **three** ways.

Exercise II

Complete each statement by filling in the necessary word. Then select **one** of the following terms that represents a concept as an example of each statement: amino acid, breakfast cereal, nutrition.

Concepts can be formed:	Example
1. from members of a class having _____ characteristics	_____
2. from facts that are unrelated by class, but have a _____ that leads to the concept	_____
3. from a set of _____ level concepts that lead to a _____ conceptual level	_____

As indicated in Exercise II, concepts can be formed in three ways. **First**, from facts that have common characteristics. The example is breakfast cereal (derived from such items as corn flakes, wheaties, or all bran). The **second** way is from facts that are unrelated by class, but that have a relationship that leads to the concept. Amino acid is the example. (The separate elements — carbon, hydrogen, oxygen and nitrogen — are combined chemically to form a particular Amino acid.) And **third**, a concept can be formed from a set of lower-level concepts that lead to a **higher** conceptual level. It is generated from many other concepts — food class, vitamins, minerals, calories, etc.

c. Principles and rules:

The highest level of generalization in treating subject content involves statements that show the relationship among two or more concepts.

Read these two statements:

a. A sentence starts with a capital letter.
b. The circumference of a circle equals $2\pi r$.

Each statement illustrates a principle. Each one is derived from a particular set of concepts. In the first statement, **sentence**, **starts**, **capital**, and **letter** are concepts. Together they comprise an important rule in written composition.

In the second statement, **circumference, circle, equals, two, pi,** and **radius** comprise the set of concepts which makes this a principle or formula in mathematics.

Exercise III

Now look at these statements. Each is an important principle in its own subject field. For each, underline the concepts that are used in deriving the rule. Then in the bracket before each statement, write the total number of concepts you identified for each one.

( ) a. Each chemical element has an atomic number which distinguishes it from every other element.

( ) b. A speech consists of three parts: an introduction, the body, and the conclusion.

( ) c. An economic upturn in the business cycle stimulates growth, employment, and risk-taking.

In Exercise III, for **a** there are 6 concepts — *each, chemical element, atomic, number, distinguishes, every other*. You may indicate that the last word "element" is also a concept. It is probably the same concept represented by the earlier term "chemical element".

For **b** there are 7 concepts — *speech, consists, three, parts, introduction, body,* and *conclusion*.

And in **c**, we find 6 concepts — *economic upturn, business cycle, stimulates, growth, employment, risk-taking*.

Do you see the dependence upon concepts when principles or rules are being taught? This dependence emphasizes how important it is to be sure that students understand the meaning of the concepts you use when a principle or rule is being presented and explained in a lecture.

d. Problem-solving and content applications:

In learning principles and rules, students should understand the basic facts and concepts—the parts—but also know how to use the related principle or rule in different situations. Knowing a principle means much more than just memorizing a statement. Application of the principle is a next essential stage in learning. In your instruction, you may require students to apply the principles by solving problems, by explaining situations, by inferring causes, or by predicting consequences.

Exercise IV

For each of the stated principles, indicate with a checkmark the one or more items that apply the principle or otherwise *use* the principle in problem-solving.

a. The prenatal development and appearance of new body structures in the human fetus follow a definite sequence.

_____ (1) Stating the principle in one's own words.

_____ (2) Arranging a set of photographs taken of a human fetus into a developmental order.

_____ (3) Listing the order in which new body structures appear in the development of a human fetus.

_____ (4) When a certain stage of human fetus development is described to indicate what the next step in development will be.

b. The form of haiku poetry consists of three lines. The first has 5 syllables, the second 7, and the third 5.

_____ (1) Examine sample of poetry, selecting those that are haiku.

_____ (2) Write a definition of haiku.

_____ (3) Write a haiku selection.

_____ (4) Evaluate other students' haiku in terms of following the proper form.

For Exercise IV a., items 2 and 4 are activities for students on the problem-solving level, while 1 and 3 only relate to recall of the principle itself. In b., 1, 3, and 4 cause the student to use and apply the stated principle. Two is simply informational recall.

Thus far, we have seen that the sequence of content for a topic includes facts and information details, concepts, and principles or rules — all leading to the application of the knowledge to new situations.

2. Choosing examples and resources

As you plan a lecture you are preparing to accomplish a number of objectives relevant to the lecture content. Some objectives may be concerned with motivating students toward an interest in the subject or a topic, and others with assisting students to acquire and use knowledge. While much of your presentation may include verbal information about the topic, there is the need in every lecture to employ examples so that terms and concepts are clearly understood and the topic is presented in an interesting manner. Without an adequate use of examples, illustrations, or applications, memorized information can remain vague and meaningless generalizations for students.

Where possible, select examples that have meaning to your students in terms of their own background and experiences, rather than examples solely from your own particular experience. Examples should assist students to recognize, identify, compare, distinguish, evaluate, and otherwise understand and apply the facts, concepts, and principles that comprise your subject content. Recall the activities that you selected in Exercise IV. These were examples of how to provide students with meaningful experiences for learning a principle.

Exercise V

For each of the objectives described below, cite at least one example you might use to help student understanding.

a. To recognize the benefits that may be derived by using solar energy for some heating purposes in a home.

b. To distinguish the duties of the five crews under the direction of a stage manager for a stage show.

Obviously a wide range of examples might be selected to provide an understanding of the two situations in Exercise V. For a., you might illustrate the amount of money saved over a period of time when a solar installation replaces conventional electric or gas heating. For b., the assignments for each crew during an actual play could be indicated, and thus their responsibilities distinguished.

The use of humorous anecdotes and personal experiences, when pertinent to the topic, also can help students to grasp meanings and see applica-

tions of the major ideas you are having them consider. Often students can be encouraged to suggest relevant examples. Through the student examples and by class discussion, an instructor can judge whether students understand the idea under consideration.

In addition to using verbal examples, and in order to provide concrete illustrations of concepts and rules, one or more instructional resources may be chosen to supplement your words. Resources typically available for use in lectures include:

- ☐ *audio recordings*
- ☐ *video recordings*
- ☐ *overhead transparencies*
- ☐ *models or mockups*
- ☐ *flip charts*
- ☐ *films, filmstrips, slides*
- ☐ *multimedia projection presentations*
- ☐ *displays, diagrams, or other graphic materials on chalkboard or large charts*
- ☐ *guest speakers*
- ☐ *teleconferencing*

The decision to select one or more of these resources for use in a lecture should be based on your objectives and nature of the content to be treated. For example, an objective that requires students "to identify the sequence of steps in a process" may be best illustrated by showing the steps with a large chart, projected still pictures, or transparencies.

3. Selecting presentation format

The general format of the lecture involves making an introduction, presenting the content, and summarizing. The introductory phase enables the instructor to generate interest by giving an overview or otherwise helping students to see how the lecture related to their own experiences, previous lectures, and course objectives.

The procedures you use in lecturing will reflect the emphasis you place on your intention to:

- ☐ *Extend the factual knowledge of students about a topic or subject.*
- ☐ *Prepare students to understand ideas, concepts, principles, and rules relative to the subject.*
- ☐ *Prepare the students to use the information, ideas, concepts, principles, and rules in problem-solving and other practical situations.*

☐ *Help the students develop a positive attitude toward the subject.*

There are various approaches to the conduct of a lecture. Generally, they can be grouped within two paired categories. The most common are **formal** or **informal** and **deductive** or **inductive**.

a. Formal and informal methods

Some instructors are most comfortable when making their entire presentation to a class without having any interruptions during their delivery. This is the **formal** method. While much of it can be verbal, the instructor may write on the chalkboard, show visual materials, use the flipchart, give demonstrations, and take other steps to present the content clearly.

In the **informal** method, the instructor stops frequently to allow students to ask question and to pose questions for student responses. In this method, in addition to questions and answers, students may be encouraged to make comments that can lead to productive discussion among one another and with the instructor.

What advantages and disadvantages do you see with each of these methods (**formal** and **informal**)?

Exercise VI

This exercise is in three parts:

A. Under each heading list both advantages and disadvantages of the method.

Formal lecture method

Advantages	Disadvantages

Informal lecture method

Advantages	Disadvantages

B. Which ones of the four intentions (Section III. Selecting presentation format) might be best accomplished by each of these lecture formats?

Formal

Informal _____

_____

C. Your preference for one method or the other (or a combination) and your reasons:

_____

_____

A list of the advantages and disadvantages for each method that has been derived from the literature follows.

Formal lecture method

Advantages	Disadvantages
Large amounts of content can be covered during the period	Does not permit students to raise questions or make comments at opportune time
Instructor can maintain the continuity and flow of ideas presenting material as planned for the time period	Reinforces the passive acceptance of the presentation
Convenient for maintaining a planned schedule for treating the content	Limits amount of information on how and whether students are achieving lecture objectives

Informal lecture method

Advantages	Disadvantages
Encourages students to be more active during the period	Not all students will ask questions voluntarily
Allows instructor to ask questions that check levels of student understanding and the effectiveness of instructor communication	Continuity of lecture may be disrupted since instructor can be drawn away from content being presented
Permits students to raise points and get guidance while the topic is being presented	Planned time schedule may be upset
Creates opportunity for the spontaneous exploration and follow up of new ideas	Questions by some students may be of little interest or value to other students
Provides some clues for improving future lectures on the topic	The spontaneous activities for a few may be distracting or frustrating to others

By comparing your lists in Exercise VI, Part A, with those suggested on the aforementioned list, you can better judge the suitability of each method for yourself. Besides selecting a method according to your own teaching style, the choice of one method over the other is greatly dependent upon the objectives being served.

In answer to Exercise VI, Part B, formal lectures may be most satisfactory when presenting factual information and preparing students to develop an understanding of concepts and principles. These are the **a** and **b** statements of intentions at the beginning of this section. The **c** and **d** statements can most likely be handled effectively by the informal method. For Part C, the method selected should depend upon the specific situation. The style and skills of an instructor and his/her level of preparation in the topic may greatly influence the decision to use one or the other method. What many successful instructors do is to alternate formal and informal approaches during a lecture period to accomplish specific purposes. By mastering the two modes—formal and informal—you can better judge their appropriate uses in your own lectures.

b. Deductive and inductive methods

The **deductive** method starts with a statement—a definition, concept, principle, or rule. This is followed by examples, illustrations, or applications. The examples can be presented by the instructor or drawn from students by questioning and discussion. Students are thus led to see the relationship between the generalization and specific situations that relate to it. Here is an example of the deductive method:

An instructor in a Health Science course states that, "carbohydrates comprise the sugars and starches in our diet"—a principle of nutrition. Students then are asked to give examples of carbohydrates in these two groupings. They suggest bread, rice, barley, and other grains as starch-based carbohydrates and various fruits and vegetables as sugar-based carbohydrates.

The **inductive** method reverses the process. Facts, examples, or situations are stated or observed; from them the generalization is derived. The instructor might present it or students may be encouraged and guided to discover it. For example, if a Health Science instructor shows a class slides picturing various individuals and indicates the type of daily activity and dietary caloric intake of each person shown, the relation between energy input and output could be derived as the gain, loss, or stability of body weight. This becomes the generalization from the examples presented.

The deductive method is often considered an *expository* technique whereby an instructor tells students both generalizations and the evidence in support of the generalizations which students are expected to learn.

The inductive method is characterized by *discovery* or *inquiry* techniques by which students may receive facts or make observations and by developing relationships and asking questions, they can be led to find and specify appropriate generalizations. What are the advantages or disadvantages of these two methods? Complete Exercise VII.

Exercise VII

Place a number before each statement according to whether it is:

1. An **advantage** of the **deductive** method.
2. An **advantage** of the **inductive** method.
3. A **disadvantage** of the **deductive** method.
4. A **disadvantage** of the **inductive** method.

_____ a. Can present the instruction more rapidly.

_____ b. Students may be more mentally active while participating in formulating the generalization.

_____ c. Often few students participate; the majority wait for the answer.

_____ d. Teaches a process by which students can derive their own conclusions in important matters beyond the classroom.

_____ e. May permit verbalization of principles without understanding the basic fundamentals.

_____ f. Usually perceived by students as being more orderly and logical.

_____ g. More possibility for overlooking contribution from student's experience.

For Exercise VII, **a** and **f** are advantages of the deductive method; **b** and **d** are advantages of the inductive method; **e** and **g** are disadvantages of the deductive method; and **c** is a disadvantage of the inductive method.

The teaching methods we have been examining can be employed in various arrangements. An instructor may find it beneficial to alternate between formal and informal techniques or from deductive to inductive methods during different sections of a lecture. The two groupings can even be intermixed. A formal presentation may be employed with the deductive method, while informality can implement the use of an inductive procedure. The decision on which approach to use should be based upon the objectives or outcomes to be reached.

4. Creating conditions for successful learning by students

In addition to organizing the lecture content, choosing resources for use, and selecting methods of delivery, a greater possibility for assuring successful learning can be realized if attention is also given to:

1. Recognizing student preparation.
2. Providing for student participation.
3. Controlling physical conditions of the room.

a. Recognizing student preparation

Most professors have some general information about the students enrolled in their courses and their readiness to take a course. The more you know about your students, the better you can adapt your lectures to their interests, experience, and levels of preparation for your course. What information about your students might assist you most in preparing lectures for them? List 4-5 items of information concerning your students, their background and interest that would be especially helpful to you as you prepare your lectures.

While extensive course modification may not be possible after you gather and analyze data about a current class, the information can help you:

- *decide on the depth of treatment or emphasis necessary for individual topics*
- *select examples and illustrations that best relate to student experiences and interests*

- *group students for class or outside-class activities*
- *decide on projects or assignments*

The fact that you attempt to learn more about your students can itself serve to motivate and further interest them in your course.

How might you gather data from students if you wish to give attention to the matters enumerated above. Read the five statements which follow and write beside each one how you might gather the information.

Information you may want to find out about your students

---

1. *Previous courses taken in the subject field.*
2. *Preparation for this course in prerequisite areas.*
3. *Skills in necessary basic areas.*
4. *Possible future uses to be made of the course content.*
5. *Experiences students expect or desire in the course.*

For items 1, 2, 4, and 5, a questionnaire might be prepared for students to complete *during the first class period*. An analysis of the replies should give you an idea of the preparation and expectations of your students.

For item 3, special diagnostic tests or checklists could be used.

Another aspect of student preparation is their *readiness for each lecture*. They may need out-of-class readings, review of previous lecture material, or prior preparation through lab or field work. How can you best insure that students will be prepared when they come to a lecture so each can gain what is essential from your presentation? What 3-4 activities might you use to encourage students to prepare themselves before attending a lecture? (This is not always easy especially in courses where students are not expected to do anything outside of class.)

Compare your list with the items which follow:

Suggested activities to encourage students to prepare for a lecture

---

1. *Making clear in advance that each lecture is based directly on certain topics, readings, and other preparatory activities.*
2. *Providing a list of the vocabulary, main concepts, and other key points that should be studied or reviewed prior to the lecture.*

3. *Providing a list of objectives and/or questions for guidance or required completion from readings prior to the lecture.*
4. *Giving a quiz at the start of your lesson covering preparatory materials and activities.*

Obviously, there are a number of different actions that could be taken to encourage students to prepare for a lecture. By starting with the aforementioned suggestions for assisting or encouraging students to prepare themselves for your lectures, you will continue to devise many others.

b. Providing for student participation

The lecture method most frequently employs one-way communication; from instructor to students. This procedure may result in students being passive receivers of information. The amount and kind of mental activity encouraged and required of students will directly affect their interest in the lecture and what they learn.

One way to stimulate interest and mental activity is to inform students what they will be required to learn, and how the lecture is related to their readings and practical activities. Another way of providing for student participation is through some type of active involvement as the lecture proceeds.

In what ways can you accomplish both of these practices? Complete Exercise VIII.

Exercise VIII

List some ways you can provide for student participation in a lecture to:

- Inform them what they are required to learn.

- Encourage their mental participation as the lecture proceeds.

In terms of the first item, namely to inform students of what they are required to learn and the relation of the lecture to readings and preparatory activities, here are two recommendations. One, that a hand-out sheet be provided to each student at the lecture session or prior to it which enumerates the objectives to be treated in the lecture. Or, two, that the list of objectives be written on the chalkboard, flipchart, or prepared on a transparency and projected at the beginning of the class period so that students may refer to them as the lecture proceeds. The importance of informing students of what you will present in the lecture, in terms of what they are to learn, can be helpful to ensure the mental involvement of students during the lecture.

c. Controlling physical conditions of the room

The successful presentation of a lecture and resulting successful learning by students may depend in part on the physical arrangements and other conditions relating to the lecture room. These conditions include: seating arrangements, illumination and light control, ventilation and temperature control, and elimination of outside distractions and disturbances.

- *Seating arrangement*

  Make sure the chairs are arranged so that each student can easily see the instructor, the chalkboard, and materials that are displayed. Depending

on the size of the room and the arrangement of chairs, attention should be given to large and legible writing. A rule-of-thumb is: letters should be at least one inch high for each 30 feet of viewing distance. When students cannot comfortably read information being presented, either on the chalkboard, flipchart, or transparency, they become frustrated and lose interest. When seats are permanently attached to the floor, either you endure or complain.

- *Illumination and light control*

  A suitable light level should be maintained in the classroom for ease of viewing and for note-taking. Sufficient light must be reflected from the chalkboard to insure the contrast necessary for good viewing. Also a high light level at the front of the room tends to hold student attention. Beware of glare or unusual bright spots caused by the sun or other outside light sources that reflect from display surfaces. Control unwanted light with window blinds or shades. When projection equipment is used, be sure the room light level is controlled so little or no light falls on the screen and impairs the picture image. *Leave the lights on whenever you utilize the overhead projector.*

- *Ventilation and temperature control*

  A comfortable temperature should be maintained in the room. The thermostat may be set at a suitable level; but if the room becomes too warm or too cold, be alert to either resetting the thermostat or requesting that it be reset. Also open windows to refresh the air and help to control temperature in warm weather. Inadequate oxygen levels can be a significant cause of student inattention. When was the last time you considered temperature as a key to good teaching?

- *Outside distractions and disturbances*

  Be alert to the need for closing windows or the classroom door if there are distracting sounds.

  An instructor may have little control over these physical conditions, but you should be alert to those that you may be able to control, or have controlled, so you can provide the most suitable environment to promote student comfort and attention.

5. Improving instructor-student relationships

Exercise I

The following terms are often used to categorize and label various student attitudes — curious, hostile, indifferent, attentive. Write each one of these terms under either the positive or negative heading. Then write a term which describes the opposite condition as with the example eager/bored.

	Positive	**Negative**
Example:	eager	bored
	_____	_____
	_____	_____
	_____	_____

Listed below are several descriptions of classroom situations which, if occurring, could provide clues about the tone or atmosphere of the class as a group. Look for the descriptive clues indicating the type of atmosphere.

A. Mr. Fleet rushes into the classroom, does not acknowledge the presence of the students and begins lecturing immediately, saying, "We have a great deal of material to cover today and we must move along quickly if we are to finish this topic on time." He lectures rapidly and continuously; then, as the period ends, he packs up his notes and leaves promptly.

(1) Please underline key words in this scene which describe the atmosphere.

(2) How would you characterize the atmosphere which Mr. Fleet might have created?

positive

negative

B. Ms. Long has taken several minutes to hand out the mid-term test which must be completed in the hour-long class period. Before giving the go-ahead to begin, she takes about seven minutes to talk about the grading procedures on the test, the percentage of the overall grade for the class for which this test will count, continuing to discuss the project requirement, the reading assignment for the next class meeting, and several other bits of class business which she wants to cover.

(1) Please underline the key words in this scene which describe the atmosphere.

(2) How would you characterize the mood which Ms. Long might have created?

positive

negative

C. Mr. Goodman is leading a discussion in class on a topic in which several students have expressed particular interest. He pressures no one to participate in the discussion but moderates the group so that everyone who wants to contribute has an opportunity to do so. He listens and responds to each comment or question with his full attention.

(1) Please underline the key words in this scene which describe the atmosphere.

(2) How would you characterize the mood which Mr. Goodman might have created?

positive

negative

Exercise II

Which of the behaviors by an instructor would increase the probability of student anxiety?

Item(s) _____

Which will reinforce confidence?

Item(s) _____

a. Express doubts about the ability of students to succeed on a test

b. Acknowledge student contributions to discussion

c. Praise student efforts on term projects

d. Encourage students to keep up the good work

e. Ignore student comment and proceed to invite another student to comment

Which of the instructor behaviors is likely to increase student frustration?

Item(s) _____

Which will reinforce challenge to the students?

Item(s) _____

a. Gives contradictory directions for an assignment

b. Asks questions to stimulate interest

c. Assigns specialized readings too sophisticated for course level

d. Assigns repetitious readings in different sources

e. Relates test items directly to course objectives

Which of the instructor behaviors is likely to cause student humiliation?

Item(s) _____

Which will reinforce student self-respect?

Item(s) _____

a. Critizes individual students in presence of class

b. Accepts ideas and opinions of students

c. Listens carefully to students' comments

d. Compares a group unfavorably with another class

e. Encourages students to confer on problems they may be having in the course

Which instructor behaviors probably cause students to be bored?

Item(s) _____

Which will reinforce and stimulate inquisitiveness?

Item(s) _____

a. Speaks in a quiet, monotonous voice

b. Assigns work too elementary for class level

c. Displays energy and interest in the subject

d. Relates course content to student interests

e. Involves students actively during presentations and class discussions

Which behaviors are likely to produce student discomfort?

Item(s) _____

Which will increase the probability of student comfort?

Item(s) _____

a. Lectures for 3 hours without a break

b. Leaves window open with building construction occurring close by

c. Closes window on a hot day

d. Darkens room when using overhead projector

e. Seeks rooms with appropriate seating and conditions for style(s) of instruction to be used

Exercise III

Complete this chart by filling in the open boxes to indicate how

A. The action of the instructor
B. influences student attitudes and behavior positively or negatively, and
C. has impact on the instructor/student relationship

Action of Instructor	will influence	Attitude or Behavior in Students	and contribute to	Instructor-Student Relationship
1. Provides vague objectives. Teaches one thing and tests on another.		Feel frustrated — a lack of trust in instructor — confusion — anxiety — resentment		Students may choose not to interact — may withdraw — or become hostile (moving away or against)
2. Gives acknowledgement to all student comments in class				Relationship may be positive and respectful (moving toward and with)
3. Gives unannounced "pop quizzes" with no indication of their importance		Feel a lack of trust and resentment, become guarded or suspicious		
4. Gives unenthusiastic lectures and shows little interest in the course				Relationship may be uncooperative and apathetic (moving away or against)
5. Clearly states the objectives of the course, the grading methods and practices, and follows those guidelines		Aware of responsibilities and able to make realistic decisions		

6. Ridicules students for "wrong" answers

7. Exhibits enthusiasm and interest in presenting lectures or in conducting discussions

8. Encourages students and recognizes their contributions and achievements.

Exercise IV

Four types of student reactions are presented in the matrix below. How would you interpret these reactions? After reading the matrix, circle the appropriate term in each box at the bottom of the page. Each box represents a student reaction.

Student Reactions to the Situation	Behaviors usually observed or recognized	Behaviors not usually observed or recognized
Acceptance	1. Student is poised on the edge of the chair, writing very fast as you lecture, looking up to nod affirmatively.	2. Student takes notes consistently throughout a lecture and returns eye contact
Resistance	3. Student glares at you, folds arms across chest, and makes a half turn away from you in his chair.	4. Student looks out the window, passes notes back and forth with the person next to him, stifles, yawns.

	Behaviors usually observed or recognized	Behaviors not usually observed or recognized
Acceptance	1. Enthusiasm Anger Attentiveness Apathy	2. Enthusiasm Anger Attentiveness Apathy

Resistance	1. Enthusiasm Anger Attentiveness Apathy	4. Enthusiasm Anger Attentiveness Apathy

Exercise V

Following is an example of a message from an instructor which could be received and interpreted in more than one way by students. Please rate as positive or negative what you think the attitude toward the message might be in the case of two students who interpret two different intents on the part of the instructor.

Instructor's Message	**Instructor's Assumption**	**Instructor's Intent**
Stated during a class discussion of a reading assignment that students complained was too difficult: "Come on, it's easy, you can do it. You can do better than **that**, can't you?"	That students are capable but not trying hard enough.	To motivate the students to do better and to liven up the discussion.

Student #1: perceives the intent to be encouraging and well meaning.

Student #1 would have a positive reception of the message.
negative

Student #2: perceives the intent to be a "put down" of the abilities of the class.

Student #2 would have a positive reception to the message.
negative

Exercise VI

Following are examples of closed questions. Formulate **an open question** which could be substituted for example.

closed or inhibiting facilitating:	1. "Why did you cut classes all those weeks?"
closed or inhibiting facilitating:	2. "You feel nervous about taking the test because you're unprepared, right?"
closed: facilitating:	3. "You don't really believe that theory do you?"

Exercise VII

Please circle the word(s) that most exactly fits (fit) the description of the instructor as an expert:	a. informed b. informal c. collaborative
Please circle the word(s) that applies (apply) to the description of the instructor as a formal authority:	a. the bureaucrat b. the administrator c. the evaluator
Please circle the word(s) that seems (seem) to fit the description of the instructor as a counselor:	a. the humanist b. the recruiter c. the authority
Please circle the word(s) that seems (seem) to fit the description of the instructor as a facilitator.	a. non-directive b. collaborative c. formal
Please circle the word(s) that seems (seem) to fit the description of the instructor as a model.	a. symbolic b. directive c. consulting

Exercise VIII

Below are examples of student comments or questions to instructors. By choosing appropriate letter from the list, indicate in front of each example the teaching function students are likely to perceive.

A. Expert
B. Formal authority
C. Counselor
D. Model
E. Facilitator

_____ 1. "Are the term papers due on May 12 or May 15?"

_____ 2. "I wish I knew as much as you do about the topic. I really want to learn as much as I can about it."

_____ 3. "Thank you for listening. I appreciate your encouragement."

_____ 4. "Do you think the United States would have gone on to fight a full-scale war in Vietnam if Kennedy had lived?"

_____ 5. "Could you tell me more about the professional association you talked about so I could inquire about membership?"

_____ 6. "I'm glad you helped me sort through all those ideas I had for a lesson topic. Now I feel I can make a choice based on some good considerations."

Exercise IX

Mr. Byrd teaches an upper division Social Psychology class. He has strong beliefs that his students should make as many choices as possible in determining their own educational goals. He sees his role as a guide to help students discover what is important to them and how to pursue their own goals for knowledge. He wants them to define for themselves what they will learn. He has prepared a bibliography of suggested readings around which much of the class discussion is focused. He requires that each student choose a major

topic of study within the broad field of Social Psychology and communicate to him in whatever fashion they choose what they have learned: they may write a traditional term paper, present a lecture in class, lead a discussion, compile an annotated bibliography, or choose another method of presentation. In this way, Mr. Byrd hopes to provide each student with an equal chance to succeed in whatever way is most comfortable for him or her and within a subject area which motivates his or her interest.

How would you characterize Mr. Byrd's approach to this class? (Choose one)

Expert	(knowledgeable)
Formal authority	(the administrator)
Counselor	(the recruiter)
Facilitator	(non-directive)
Model	(symbolic)

John is a 20 year old student in Mr. Byrd's class. He feels anxious about the choices he has been asked to make about a term project. He has taken a preponderance of lecture courses which have required objective tests based on textbook readings. He has had little experience in doing research, and feels at a loss about choosing a topic. He wishes Mr. Byrd would just assign a text and give multiple choice tests like everybody else. It is getting close to the time when Mr. Byrd wants to have decisions from the class about their choices of topics, and John still hasn't made a choice.

How would you characterize John? (Choose one)

☐ competitive	☐ participant
☐ collaborative	☐ dependent
☐ avoidant	☐ independent

What course of action would you take in reacting to John's concerns about selecting a topic? Would you:

A. Tell him you know just the thing that would be sure to spark his interest — it's an exciting area you've wanted to research for a long time now. Load him up with a stack of your own books and turn him loose.

B. Tell him any topic within the broad field of the course would be fine, just come back and check it out with you before he starts working on it.

C. Ask him if he has come across areas in the readings for the course that have interested him which he would like to know more about and might like to pursue as a topic.

D. Ask him about his major field or study and his other interests in or outside the school to get an idea of the areas he values that might help in his choice of a topic.

E. Tell him you would prefer that he choose a topic without your influence entering into the decision.

Exercise X

Please rate the following actions of a teacher that would indicate high or low accessibility and availability for students.

Action of Instructor

High or Low:

_____ 1. Acknowledges and greets students when passing them in hallways.

_____ 2. Spends most of time away from campus.

_____ 3. Keeps catch-as-catch-can office hours.

_____ 4. Is always in a hurry to be somewhere else.

_____ 5. Makes students feel welcome as office visitors, not intruders.

Please rate the following actions of an instructor that would indicate high or low accessibility and availability.

Action of Instructor

High or Low

_____ 1. Makes time to talk with students before and after class.

_____ 2. Is prepared with information to answer educational and career questions, or can direct students to relevant resources.

_____ 3. Makes no changes or modifications of course plans based on student input or interest.

_____ 4. Learns names of students in class.

_____ 5. Spends most of course time in one-way communication — talking "at" instead of with students.

_____ 6. During class encourages students to have meetings outside class. States office hours and keeps them.

Exercise XI

The following matters were given attention in this module. Reply to each question in terms of your own situation.

1. **Labels for students**

   a. Do you frequently assign "labels" to individual students as you observe their behavior?

   _____

   b. Are your labels most frequently *negative* or *positive* ones?

   _____

   c. Could you develop a checklist or rating scale for measuring student attitudes?

   _____

2. **Classroom atmosphere**

   a. What sort of an atmosphere do you feel you create in your classroom during the first meeting of a course? As the course progresses?

   _____

b. What steps might you take to create a more positive atmosphere at either or both of these periods?

3. **Communication between you and your students**

a. What different types of communication do you engage in with your students?

b. Which ones do you feel are most successful?

c. Then, which ones do you feel need improvement?

4. **Facilitating communication**

a. With which skills do you feel you are most capable?

b. To which ones would you like to give attention for improvement?

5. **Classroom instructor functions**

a. With which of the five functions do you feel you are most capable?

b. To which ones would you like to give attention for improvement?

6. **Student learning styles**

a. Can you identify specific students in a present or recent past class that represent each of the six styles described?

b. What specific recognition, encouragement, or help might you need to give students in each category?

6. Specific assessment of your teaching

Respond by circling the number which most clearly indicates what you usually do.

1 = Always
2 = Sometimes
3 = Rarely
4 = Never

Do I:

1.	Share a course outline/syllabus with the students?	1	2	3	4
2.	Update class presentations with new information?	1	2	3	4
3.	Seek better textbooks and learning material on an ongoing basis?	1	2	3	4
4.	Know the names of all my students?	1	2	3	4
5.	Know the students' abilities and backgrounds?	1	2	3	4
6.	Leave class anticipating the next meeting	1	2	3	4
7.	Attempt to find out from students what they understand my expectations to be?	1	2	3	4
8.	Encourage and/or insist on questions and discussions?	1	2	3	4
9.	Give tests and/or examinations which evaluate how well my stated objectives have been reached?	1	2	3	4
10.	Remain an impartial and fair evaluator?	1	2	3	4
11.	Try to make personal contact with students who are doing poorly in my course?	1	2	3	4
12.	Change my methods when students do not seem to be learning what I think they should?	1	2	3	4
13.	Explain exactly how final grades are derived?	1	2	3	4
14.	Return papers promptly and marked so students can see what they did right?	1	2	3	4
15.	Use tests as a teaching device?	1	2	3	4

16.	Maintain office hours regularly which I invite and encourage students to use?	1	2	3	4
17.	Perceive students as individuals instead of stereotyping?	1	2	3	4
18.	Use examples that are relevant to students and not a reflection of my age?	1	2	3	4
19.	As a rule, cover the amount of material I intend to cover during a given period?	1	2	3	4
20.	Respond to student feedback (inattentiveness, confusion, interest) and make appropriate adjustments during a given presentation?	1	2	3	4
21.	Openly share my commitment to and concern for course content with students?	1	2	3	4
22.	Acknowledge that student learning styles differ?	1	2	3	4
23.	Look over, organize, and otherwise prepare lecture notes before arriving in class?	1	2	3	4
24.	Know how to utilize the chalkboard and the overhead projector effectively?	1	2	3	4
25.	Teach so that five years after taking a course with me students will remember what is most important	1	2	3	4

7. Oral questioning techniques

Oral questioning is an effective way to stimulate student motivation and participation. Questioning provides for involvement of all students. It focuses student attention and develops interest and curiosity. The effective use of the oral questioning technique provides students with opportunities to practice self-expression and to have their knowledge used as a class resource. At the same time, it allows variety to be added to the lesson.

Logically sequenced questions can stimulate logical and critical thinking and serve as a guide to reasoning. Use of questions directed at different levels of knowledge can lead students into the different levels of thinking.

The oral questioning technique can be used for a variety of purposes. It can be used to introduce, summarize, or review a lesson; to clarify points previously made; or to bring up points omitted. Other uses include bringing reading assignments into focus, developing new insights and promoting understanding, developing attitudes and values, and teaching students to *use* ideas rather than simply memorize them.

Oral questioning can provide important evaluation information. The students' preparation for the lesson can be tested. Questions during the introduction can serve as a pretest of students' knowledge level. Using questions dur-

ing the lesson can provide immediate feedback on how student learning is progressing. Incorporating questions in the lesson summary and review can provide at least a partial evaluation of the extent to which the instructional objectives have been achieved.

a. Limitations?

Are there limitations to oral questioning? Let us consider a few. Questions directed at large groups are often inaudible. The same applies to student responses. Ways of overcoming this difficulty: speaking loudly, repeating questions and answers that may not have been heard. The latter should be moderately applied if it is not to become tedious. Questioning does involve considerable class time as compared to other approaches.

Individual characteristics of students can also affect the success of oral questioning. Shy students may be hesitant. There may be a tendency for a few students to dominate the discussion.

b. Characteristics of good questions:

A good question should be —

a. concise and include one idea only.

b. short enough for students to remember.

c. timely, interesting, thought provoking, and relevant to the lesson being taught.

d. stated in language familiar to students (a question is not the place to introduce new vocabulary).

e. stated to stress key points of a major lesson topic.

f. stated to require more than a guessing response.

g. stated to require more than a simple "yes" or "no".

h. stated in such a way that it does not suggest the answer.

c. Good questioning techniques:

What is the general sequence of oral questioning?

1. The teacher asks a good question of the entire group. (Students do not respond *yet*.)
2. The teacher pauses to give students time to formulate their responses.
3. The teacher directs the question to a specific person.
4. The teacher gives that person time to reply, and gives attention and consideration to his/her response. *Each answer* (right or wrong) *demands your respect.*
5. The teacher should attempt to involve as many students as possible during the questioning activity.
6. The teacher, within reason, should reward correct responses and avoid reacting too negatively to incorrect or incomplete answers. Through effective questioning skills, the teacher can often get the student back on track.
7. The teacher should encourage students to go beyond the first answer. Encourage them to expand and clarify an idea and to back it up with facts and illustrations. "Yes" and "no" questions should require "why" and "how" explanations. Minimize the questions which focus on factual recall.

8. The teacher should never feel that a question has to be repeated for the benefit of the inattentive person.

d. How to handle student answers:

Constructing a good question and asking it in the correct way is the first of two steps in effective interrogation. The second step has to do with handling student answers.

Groisser (1964) believes that the ability to cope with student answers is the real test of good teaching. He classifies student responses into (a) correct answers, (b) partially correct answers, (c) incorrect answers, and (d) no answer at all. The suggested practices for each category are synthesized from Groisser.

a. **Correct answers.** These should be rewarded with responses of recognition or praise. Lengthy student responses covering several key points can be broken down by asking others to explain or expand on individual points in the answer. Lengthy responses may be an indication that the teacher's questions are too broad.

b. **Partially correct responses**. When this occurs, give credit for the correct portion and strive to improve the incorrect segment. "Let's see if someone can enlarge upon your answer." "Can you add anything to this response?"

c. **Incorrect answers**. When a totally incorrect answer to a question is given, the teacher may give a noncritical response. "Good try, but the main point of the question was overlooked." The teacher could choose to ask the same question to others or to ask the first student other questions to logically lead him/her to the correct answer.

Occasionally a student will misconstrue a question and give an irrelevant response. Question may have to be reworded.

d. **No answer**. Direct the question to another person. If several are unable to respond, try rephrasing. If there is still silence, you may want to reteach. The frequent need to rephrase queries may indicate a need for more careful question construction.

Sarcasm is always a no-no in relation to responses. It is not always easy but **remember that if the student knew all the answers, the content would already be taught**. Using wrong answers positively is part of effective teaching.

e. How to handle student questions:

Student questions should be encouraged and anticipated by teachers. The inquisitive and searching student is one who is motivated.

f. A few do's and don't's:

If a question is off topic, and you do not want to waste class time, offer to discuss the content with the student on an individual basis after class. This avoids moving the lesson off on a tangent.

Referring a student's question to the group for an answer is a good technique.

Whenever you are unable to answer a question admit it but always find the response before your next encounter. Students can also be encouraged to research the question.

Students, on occasion, will try to stump you with difficult questions. You can respond with, "The group would be interested in knowing the answer to your question. Please look up the answer and report back to us tomorrow".

g. Types of questions:

Allen, *et al.* (1969) speak about questions which range from the highly specific (low-level cognitive behavior) to the highly abstract. In their manual, *Questioning Skills*, they identify five types of questions; namely, factual, descriptive, probing, high order, and divergent. Each is briefly discussed:

a. **Factual**. This kind of question often begins with *what, who, where, when,* or *how*. This question usually asks students to recall specific information such as facts, principles, rules, and concepts.

b. **Descriptive**. Although more complicated than factual questions, they still require memory and/or sensory descriptions. With descriptive questions, the student must recall or describe not isolated, disjointed facts, but facts organized into a logical pattern. Answers to these questions are usually longer.

c. **Probing**. A teacher may keep discussions lively and relevant by applying a probing technique *after* the students have given a response. Instead of advancing to a new question or to new content, the teacher would probe the student's response. Because your probing will depend on the response, it is next to impossible to prepare probing questions ahead of time. However, there is nothing to prevent you from accumulating a repertoire of the more common questioning formats. For example, you may be seeking *clarification*. "Exactly what do you mean by that statement?" Or you may wish to increase the person's *critical* awareness. Student is expected to justify his response. "Why do you think that this is the case?" Or perhaps you want to refocus the response to a related issue. "If this is correct, what are the implications for. . .?" Prompting may be in order in your attempt to help student arrive at the correct response. Redirecting questions, although not strictly probing, helps other students to participate. In this scenario, the teacher focuses the interaction from herself/himself and a person to herself/himself and another person.

Probing questions, in summary, are initiated immediately following the student response and said questions require students to move cognitively beyond the initial answer.

d. **Higher Order**. These are questions that cannot be answered merely from memory or by simple sensory description. It obliges the student to go beyond the factual and the descriptive and learn to generalize, to relate facts in meaningful patterns, to compare and contrast, to infer, to perceive causes and effects. These questions call for the discovery of concepts rather than for their definition. The key word related to higher order questions is **why**. The salient feature of this type of query is that it leads students to figure out answers rather than to remember them.

e. **Divergent. Probably the least often asked question**. The divergent question, because it has no "right" answer, is not terribly popular. It is an open-ended question which requires the student to use both concrete and abstract thinking to determine an acceptable response. It is a creative type question. It frees the user to explore hypotheses and alternative pathways.

8. Summary of the Sanders Question Classification System, Definitions of each Category, Key Concepts, and Related Examples of Behavior (Babin 1986)

Category	*Operations Performed (Definition)*	*Key Concepts*	*Examples of Behavior*
Memory **1**	Recall or recognition of factual or conceptual information; if student remembers information presented to him, he will know it applies to question. a. fact questions b. definition questions c. generalization questions d. skill questions e. can be *True* or *False* questions	memory knowledge repetition description remembering definition distinguishing identification recall recognition acquisition	Who was Sir John A. MacDonald? What is the capital of Canada? What is the color of this rock? Define government. List ten verbs. Who first settled Hull, Quebec? What happens to people in our society who do not pay their debts? Add 10 and 10.
Translation **2**	Translating ideas from one communication to another (perhaps from textbook to student's own language). Words to pictures; vice-versa. An *impersonal* verbal description of pictorial or diagrammatic material is given or a direct verbal translation from one language to another is given. It could include paraphrasing on the part of the teacher with students asked to find passages in text that say the same *thing. Ideas must be identified.*	translation transformation to give in own words illustration rephrasing restating	Can you state in your own words what Mr. Trudeau said? What idea that we studied in this lesson is close to the focal point of this cartoon? Can you illustrate in cartoon form the author's ideas on pollution? I just explained nationalism to you. Can you find sentences or paragraphs in your textbook that say the same thing? What is this? (showing picture of a triangle).

Interpretation **3**	Relating facts, generalizations, definitions, values, skills. To relate means to discover or use a relationship between two or more ideas. One explains himself or the thoughts and/or ideas of others. One colors his translation with his own values, beliefs, feelings, etc. Student is asked to discover or use relationships on a common-sense level. Questions should be *explicit* about what student should do. Interpretation questions ask for a pattern of thinking that can be predicted in advance. Question is *objective* in the sense that there is one or possibly a few correct answers which can be justified beyond a reasonable doubt. A student interprets if the answers have not been revealed in previous instruction. Not usually short-answer format. a. comparative relationship: comparing ideas to determine whether they are identical, similar, different, unrelated, or contradictory. b. relationship of implication: an idea that follows inevitably from specific evidence.	interpreting rearranging differentiating distinguishing explaining comparing contrasting interpolating understanding	Is the government of Canada different or the same as that of England and why? How is Toronto similar to Montreal? Compare the dictionary definition of "taxonomy" with the one given on page 6. From your text, cite evidence that there was no freedom in the ancient world. The engineer is to the locomotive as the ..... is to the .....

Application **4**	Presenting problems that approximate the form and context in which they would be encountered in life. Mastery of skills is not complete until pupil uses them successfully in the application category; student selects, transfers, and uses data and principles to complete a problem task with a minimum of directions. Skills, principles, concepts, formulae, etc., are used in a problem-solving situation similar to the learning situation wherein the skills, principles, concepts, formulae, etc., were learned. Questions designed to give students practice in the transfer of training. "How" questions often fall into this category. Also "what would happen if". *NOT* as explicit about directions as an interpretation question. These questions ask students to be able to use an idea without explicitly telling them to do so. They deal with the whole of ideas and skills rather than their parts.	application organizing transferring generalizing	What would happen if Quebec became an independent country? How would you go about solving the air pollution problem in Canada? Can you think of another reason which might explain why people in warm climates wear white? How could we help a teacher improve herself by teaching her microteaching principles? Can you think of another example that fits this definition?
Analysis **5**	Solution of a problem in the light of conscious knowledge of the parts and processes of reasoning. Must always be preceded by instruction in the form of reasoning required by the question. Student distinguishes, classifies, and relates the assumptions, hypotheses, evidence, conclusions, and structure of a statement or a question with an *awareness of the thought* processes he is using. One applies a set of one or more criteria to a group of examples in order to classify some or all into one or more categories Cue word — *why*.	detecting classifying discriminating categorizing deduction contrasting induction formal reasoning logic	What was the author's purpose? Which are facts and which are opinions and why? Why are Toronto winters milder than Ottawa's? Why does a rabbit change color in the winter?

Synthesis **6**	Engaging in imaginative, original thinking. Diverse solutions (divergent thinking) elicited. Students allowed great freedom in seeking solutions. Questions have many possible approaches. Solution requires a product, plan, proposal, or communication new to student. No specific detailed directions. One combines learned skills, principles, concepts, formulae in ways novel to himself in problem-solving and/or creative situations. Synthesis differs from application in that application deals with a horizontal transfer of learning whereas a vertical transfer is involved in the synthesis category.	producing constituting transmitting originating modifying documenting proposing planning specifying formulating creativity divergence productive thinking imagination novelty	Suppose that you decide to manufacture a cassette tape recorder that will sell better than any other. List the problems. Can you tell me all the possible ways we might use this cube? What are some of the methods we can employ to solve inflation? Can you develop a new way. . .? Give the pros and cons of legalized abortion.
Evaluation **7**	The process of making a judgment about the value of an idea, a solution, a method, using criteria developed by the individual himself. Two major steps are involved: (1) setting up appropriate standards or values; (2) determining how closely the idea or object meets these standards or values. Question must require the student to perform both steps in evaluation. Evaluation questions deal with values and *NOT* facts or opinions; student appraises, assesses, or criticizes on basis of specific standards or criteria: *NOT* opinion unless standards are made explicit. Value judgments are made based on predetermined standards, values, etc., held by the respondent. Evaluation differs from interpretation in that evaluation includes a conscious judgment.	judgment appraisal deciding assessment validation arguing selection	Which policy will result in the greatest good for the greatest number? For what reasons would you favor. . .? Evaluate the ideas in terms of cost and community acceptance Does bilingualism make sense? Are wars necessary? Is the car well constructed from a safety standpoint? Which of the two books do you believe contributed more toward an understanding of the Victorian era and why?

Recommendations

1. Teachers should be acquainted with a means of classifying questions, by either levels or functions, to ensure that higher cognitive powers are tapped through oral and written questioning procedures.

2. Varied means of developing and encouraging effective questioning practices among professors should be communicated in the context of question-answer responses on audio-tapes, video tapes and films and through demonstrations, micro-teaching and actual classroom experience.

3. Since questions are a key tool utilized by teachers in most aspects of the program, instruction in questioning should cut across all subject areas.

4. Variety is the spice of good questioning techniques. Instructors should search for a balance of factual and "give-it-back" questions with thought-provoking reasoning questions, as well as snappy rapid-fire questions interspersed with those that elicit sustained responses.

5. Professors should learn to be comfortable with "reflection" silence, that is, throw out the question, pause, and call for responses after several minutes.

6. Teachers should develop a proficiency in utilizing "crossfire" discussion techniques by referring questions and answers to others: "What do you think?" "Why do you think so?" "How would you have answered that?" "How can you prove that?" "What is your opinion of that answer?".

7. Teachers should give attention to phrasing concise questions and eliminating the practice of repeating questions and answers, a time-consuming habit which encourages bad listening habits and limited interaction.

8. Teachers should recognize the importance of planning pivotal questions — those which raise thinking above the factual recall level and direct it toward overarching principles and understandings.

9. The ideal prof

Which five traits (from accompanying list of fifteen) would you associate with the "good" university professor. Please arrange these five items in order of importance.

1st choice _____ 2nd _____ 3rd _____ 4th _____ 5th _____

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1. AVAILABILITY
   (available outside the classroom; ready to help students and provide necessary resources)
2. SENSE OF HUMOUR
3. MAKES THE PRESENTATION CLEAR
4. RESEARCH/PUBLICATION
   (organizes research projects or takes part in them; publishes books and writes articles in specialized periodicals)
5. A TASTE FOR TEACHING
   (genuinely interested in the subject at hand; shows enthusiasm)
6. ADEPT AT HUMAN RELATIONS
7. METHODICAL AND WELL-ORGANIZED
   (prepares, organizes and presents course material methodically and logically; has the ability to sum up well)
8. JUST EVALUATION
   (marking and corrections show objectivity and impartiality; the marking method is clearly outlined)
9. GOOD SPEAKER
   (speaks with ease, assurance, and in comprehensible terms)
10. KNOWLEDGE OF THE SUBJECT
    (well-informed; pertinent, up-to-date information)
11. RESPECT FOR STUDENTS
    (knows how to speak with students; is open to their suggestions, criticisms and opinions)
12. LINKS THE THEORETICAL TO THE PRACTICAL
13. PERSONAL AND ORIGINAL CONCEPTION OF THE MATERIAL
    (considers the subject from an original and personal point of view; is able to view the subject objectively)
14. INTERESTING PRESENTATION OF MATERIAL
15. PROMOTES THE INTELLECTUAL DEVELOPMENT OF THE STUDENT
    (prompts research work, fosters objective criticism, stimulates intellectual curiosity)

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